DOCUMENT RESUME

ED 267 005 SO 016 984

AUTHOR Peters, Richard
TITLE Energy. Our Common Home: Earth. A Curriculum Strategy to Affect Student Skills Development and Exposure to Diverse Global Natural/Social Environments.
INSTITUTION Global Horizons, The Center for Applied Ecosocial Studies, Plaistow, N.H.
PUB DATE Aug 85
NOTE 31p.; For related documents, see SO 016 983-986 and ED 258 893.
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Curriculum Development; *Energy; *Environmental Education; *Global Approach; *Interdisciplinary Approach; Intermediate Grades; Learning Activities; *Natural Resources; Secondary Education; Skill Development; Social Studies; Technological Advancement; Units of Study

ABSTRACT

One of a series of global education instructional units, this energy awareness curriculum was designed to be infused with existing social studies courses aimed at students in grades 5-12. Concept-based and skills-oriented, the curriculum provides opportunities for students to develop an understanding of synthetic energy sources; human dependence on nature for energy; attempts by nations to conserve and manage limited energy; and the difference between finite, infinite, and renewable energy resources. Following an introduction, the importance of combining geography education, ecological studies, and a sociological perspective in enhancing a student's global awareness is emphasized. A series of charts showing the concept to be taught, the topic, essential student outcomes, performance indicators, and content are included. They are accompanied by charts listing specific activities, print and nonprint materials, enrichment activities, and suggestions for evaluation. A rationale statement concludes the curriculum. (LH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

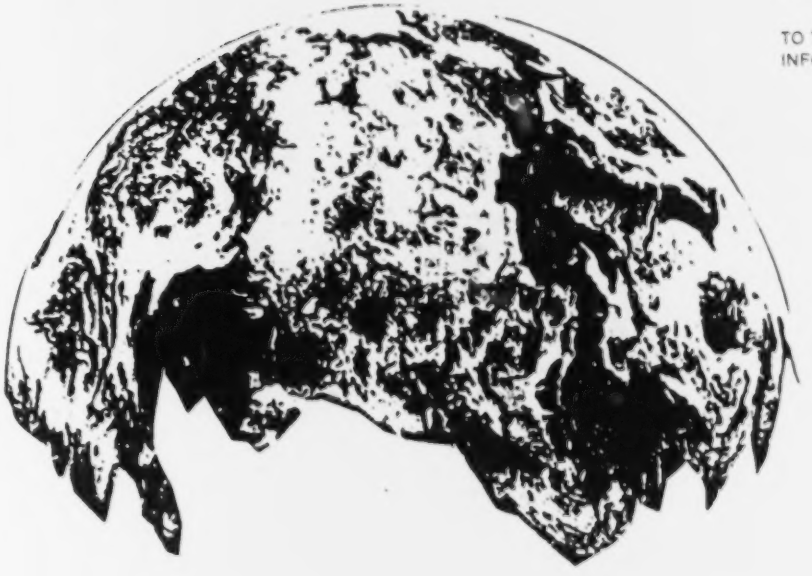
Richard Peters

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

ED267005

OUR COMMON HOME: EARTH

A Curriculum Strategy to Affect Student Skills Development and Exposure to Diverse Global Natural/ Social Environments



Richard Peters, ED D

GLOBAL HORIZONS

SP 016 987

AUGUST 1985

ENERGY

ABOUT THE AUTHOR

Dr. Richard Peters has been involved with global education instructional program development since 1970 .

He has to his credit:

STUDENT ENVIRONMENTAL AWARENESS
(SEA) Program

MAN IN HIS ENVIRONMENTS Program

PEOPLE IN THEIR ENVIRONMENTS
(PIE) Program

HUMANS AND ENVIRONMENT LEARNING
PROGRAM (HELP)

In 1981, Dr. Peters founded GLOBAL HORIZONS: The Center for Applied Eco/Social Studies . Since that time, Dr. Peters has served as Projects Director.

Dr. Peters has been published in regional and national periodicals and by the ERIC system ... in the fields of curriculum development, environmental studies, global education, and social studies.

In 1982, Dr. Peters was the recipient of a Fulbright Grant to study culture/history in India .

INTRODUCTION

In 1965, the Association of American Geographers stated that "for the United States ... to participate effectively in world affairs, its leaders and citizens must have a coherent understanding of the earth's regions and people" .

The Commission on International Education, American Council on Education (1984) stated that in order "to deal effectively with the multiplicity of problems (America faces) in this shrinking world requires an increasing international competence" . In order to maintain and increase this competence, Americans must be prepared to understand other peoples and societies well enough to be able to work effectively with them on a broad range of economic, political, and social issues.[1]

In Guidelines for Geographic Education (1984), the National Council for Geographic Education stated that "Americans' ignorance ... of the world will have dire consequences for our nation's welfare, strength, and global interdependence and for the effects we have on people in other nations. WE must strive to understand how the actions of our society influence other societies and how their actions affect us. A sound geographic education provides the concepts, information, perspectives and skills needed to understand ourselves, our

relationship to the earth, and our interdependence with other peoples of the world.

In short, geographic education can satisfy our deep need to know about other people and places, the natural environment, social environments, the capacity of the earth to support human life, and to enhance our perception of places and people on a global scale.

Throughout the course of recorded history, humans have become dependent upon finite resources extracted from the earth for survival and their collective well-being.

With the beginning of the Industrial Revolution, societies began drawing heavily from the earth's energy reserves. Since the end of World War II, the industrialized nations have competed for nature's limited finite resources. As technology and industrial productivity increased, the need for energy sources has also increased; multiplying at an unprecidented rate.

Over the course of the 20th Century, predominant dependence has shifted from renewable and natural energy sources; animals, water, wind, and wood, to exhaustible fossil fuels; coal, natural gas, and petroleum.

Once a finite source of energy is depleted, it is gone forever! Energy deposits have been formed by natural processes over millions of years. The faster nonrenewable resources are consumed, the more rapidly the supply diminishes. For example, each year the world's human population consumes as much oil as it took nature 2,000,000 years to create.

In 1980, America's consumption of oil equalled more than 25% of the worldwide production of 60,000,000 barrels

a day. Western Europe gets 55% of its energy from oil, and 75% of Japan's energy is derived from imported oil.

With increased dependence on fossil and nuclear fuels, several serious environmental problems arise.

- Land surfaces will be disturbed as overburden is removed and fossil fuels are harvested.

- The use of coal and other fossil fuels will lead to increased air, land, and water pollution.

- The potential for Three Mile Island type nuclear disasters will increase on a global scale.

- The search for fossil fuels have led to offshore drilling as well as excursions into polar regions and tropical jungles; previously inaccessible EMPTY AREAS.

- Offshore drilling can result in oil spills; having negative effects upon coastal and underwater environments.

- Supertanker transporting of crude oil can result in ecological nightmares such as the Torrey Canyon, Argo Merchant, and Amoco Cadiz disasters.

The nations of the world have a choice of alternative energy sources/techniques.

- Fossil fuels
- Nuclear power
- Synthetic fuels
- Geothermal power
- Tidal power; ocean thermal energy conversion
- Solar energy; photovoltaic cells and solar thermal energy conversion
- Wind
- Hydroelectric power
- Biomass [2]

Growth of the world's human population and the growth of per capita consumption of resources lie at the heart of global energy problems.

The sustainability of the environment is threatened by the pressure of human population upon it.[3] The environmental problem is a people problem caused by numbers plus behavior. Present levels and projections of populations make certain that the pressure of people upon their environment will continue to grow. The United Nations Fund for Population Activities estimates an increase in world population of nearly 2,000,000,000 by the year 2000 from the present 4,600,000,000.

Technology is a factor in the people-environment equation. People-pressure equals numbers, plus demands upon the environment, plus the means (technology) to their satisfaction. The critical factors are:

- the nature of the demands; including their volume

and

- the qualities inherent in the environment; including its capacity to withstand the pressures of human demand.

HUMANS & ENVIRONMENT
LEARNING PROGRAM
(HELP)

OUR COMMON HOME: EARTH is a concept based, skills oriented curriculum for grades 5 - 12 .

This GlobeGuide is designed to be infused with existing/on-going social studies courses and programs of instruction .

note

The INTEGRATED INSTRUCTION AND LEARNING ENRICHMENT FORMAT employed with OUR COMMON HOME: EARTH provides the basis for lesson/unit organization and execution .

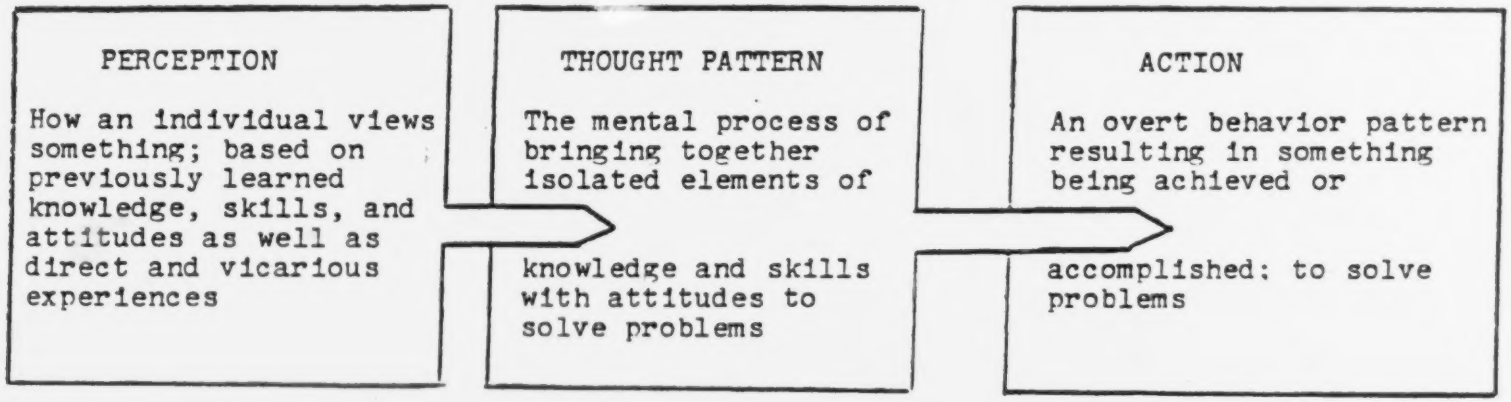
Flowing from left to right: from CONCEPT through EVALUATION, goals/objectives/activities/materials/ evaluation strategies are designed to compliment each concept studied ... and to provide students with direct/vicarious exposure to global lifespace environments .

Our Common Home

ENERGY

The Humans and Environment Learning Program is designed to create a multi-grade scope--and--sequence re: student awareness of/ exposure to/ interaction with diverse global (natural and social) environments both directly and vicariously.

The PROACTIVE ACTION MODEL (PAM) is used to involve students in inquiry-critical thinking-decision making activities and skills application/reinforcement and refinement projects.


PERCEPTION
How an individual views something; based on previously learned knowledge, skills, and attitudes as well as direct and vicarious experiences
THOUGHT PATTERN
The mental process of bringing together isolated elements of knowledge and skills with attitudes to solve problems
ACTION
An overt behavior pattern resulting in something being achieved or accomplished: to solve problems

Our Common Home: Earth is a series of global education instructional units for grades three through six. Our Common Home: Earth provides opportunities for student study of the character/nature of ... natural/social environments within the context of our contemporary world.

As a result of his/her involvement with Our Common Home: Earth, the individual student will:

a) gain exposure to diverse global environments;

b) be introduced to basic concepts re: natural and social environments;

c) develop perceptions re: global environmental relationships;

d) develop geography skills;

e) develop critical thinking/decision making/ research skills;

f) develop an understanding of how other human groups live;

g) develop an understanding of the relationship between their present lifespace environment and the world community.

CONCEPT	TOPIC	ESSENTIAL STUDENT OUTCOMES	PERFORMANCE INDICATORS	CONTENT
ENERGY science/ social studies	Human Dependence	Students will demonstrate an understanding of ways in which the quality of human life, the degree and type of technological development, and the welfare of societies are dependent on natural energy sources.	Students will: list five modern-day inventions; explain (in paragraph form) how each invention . enhanced the quality of human life; . increased man's dependence upon natural energy sources; list three man-made sources of energy; explain (in paragraph form) how each synthetic energy source has affected man's dependence on nature, or have these sources actually made man more dependent? discuss (in paragraph form) three examples of international competition for limited natural energy resources; discuss (in paragraph form) three 20th Century attempts by nations to jointly conserve/manage limited natural energy resources. Site names/dates/nations/organizations and outcomes.	An historical study of man's increased dependence upon natural energy resources, e.g., international competition, inventions, population growth, technological advancements/developments. An historical study of man's attempts to decrease his dependence upon natural energy resources by developing alternative/synthetic energy sources/systems. A study of the competition among industrialized nations for limited natural energy resources. A study of international attempts to cooperatively conserve/manage limited natural energy resources.

ACTIVITIES	INSTRUCTIONAL MATERIALS		ENRICHMENT	EVALUATION
	PRINT	NON-PRINT		
Films/filmstrips/slides/videotapes are used to introduce students to the topic. Students select a topic; energy source, invention, personality, or process. Reports are developed. Students identify international organizations re: cooperation and conservation. Reports are developed. Students select countries and report on energy resources use/conservation. Guest speakers discuss energy sources/processes for social consumption. Field trip(s) to nearby energy resources/generating facilities e.g., hydroelectric/solar. Guest speakers discuss conservation	DECIDING HOW TO LIVE ON SPACESHIP EARTH Plover Books 1973 ECOLOGY AND THE POLITICS OF SCARCITY W. H. Freeman/Co. 1977 ENERGY AND THE FUTURE Association for Science 1973 ENERGY: THE NEXT TWENTY YEARS Ballinger Pub. 1979 THE GLOBAL 2000 REPORT TO THE PRESIDENT U.S. Government Printing Office 1980	Man and His Resources McGraw-Hill Films Population Explosion McGraw-Hill Films Ecology: Land and Water EyeGate (f/c) Energy: Crisis and Resolution United Learning (f/c)	Bulletin board displays Science Fair projects re: energy sources, use, conservation, etc. A graphic survey of how energy is consumed in the local community/region. A survey of how energy is consumed in the home. What can be done to conserve? Round table discussion re: energy consumption and conservation; locally/regionally/nationally/internationally.	Reports Discussions Independent activities/study Writing quality; self expression Art work; self expression Projects Quizzes/Tests Group activities

CONCEPT	TOPIC	ESSENTIAL STUDENT OUTCOMES	PERFORMANCE INDICATORS	CONTENT
ENERGY science/ social studies	Finite Resources	Students will demonstrate an understanding of what FINITE RESOURCES are. Students will demonstrate an understanding of how FINITE RESOURCES can be conserved/ managed.	Students will: define FINITE RESOURCE(s) in their own words or match the term with the most-correct listed definition; list three examples of FINITE RESOURCES, e.g., natural gas, oil, wood; give/discuss (in essay form) an example of how each FINITE RESOURCE identified is used in modern/primitive societies; give/discuss (in essay form) an example of how each FINITE RESOURCE identified is conserved/ managed in modern/ primitive societies; suggest (in written and/ or graphic form) ways by which limited natural energy resources can be conserved/managed ... if they are not already being conserved/ managed.	A study of FINITE RESOURCES: what are they? where are they? how used? how much? A study of methods of conservation/ management ... as well as stewardship re: environmental quality.

ACTIVITIES	INSTRUCTIONAL MATERIALS		ENRICHMENT	EVALUATION
	PRINT	NON-PRINT		
Films/filmstrips/ slides/videotapes are used to introduce students to the topic. Students select finite resources and develop reports re: types, usage, supply, source, conservation, etc. Students select countries of interest and develop reports re: consumption, supply, industries, conservation, etc. Guest speakers discuss the supply/use of finite resources. Field trip(s) to local areas to identify finite resources. How are they used/ managed locally?	NATIONAL GEOGRAPHIC February 1981 "Energy" ENERGY AND HUMAN WELFARE MacMillan 1975 TO CHOOSE A FUTURE Resources for the Future 1980 ENERGY CONSERVATION AND PUBLIC POLICY Prentice-Hall 1979	Energy: Crisis and Resolution United Learning (f/c) Several television specials on the topic	Bulletin board displays Interviews with exchange students/ others re: use of finite resources in other lands. A wall map showing the location of finite resources on a global scale. Collection of primary source data (from various organizations) re: quantity/quality and use/conservation of finite resources.	Reports Discussions Independent activities/ study Writing quality; self expression Art work; self expression Quizzes/Tests Group activities Projects

CONCEPT	TOPIC	ESSENTIAL STUDENT OUTCOMES	PERFORMANCE INDICATORS	CONTENT
ENERGY science/ social studies	Renewable Resources	Students will demonstrate an understanding of what RENEWABLE RESOURCES are. Students will demonstrate an understanding of how RENEWABLE RESOURCES can be conserved/managed.	Students will: define RENEWABLE RESOURCE(s) in their own words <u>or</u> match the term with the most-correct listed definition; list three examples of RENEWABLE RESOURCES, e.g., geothermal, solar, tidal, water, wood (reforestation); give/discuss (in essay form) an example of how each RENEWABLE RESOURCE identified is used in modern societies; give/discuss (in essay form) an example of how each RENEWABLE RESOURCE identified is conserved/managed; suggest (in written and/or graphic form) ways by which RENEWABLE RESOURCES can be conserved/managed ... <u>if</u> they are not already being conserved/managed properly.	A study of RENEWABLE RESOURCES: what are they? where are they? how used? how much? A study of methods of conservation/management ... as well as stewardship re: environmental quality.

ACTIVITIES	INSTRUCTIONAL MATERIALS		ENRICHMENT	EVALUATION
	PRINT	NON-PRINT		
Films/filmstrips/ slides/videotapes are used to introduce students to the topic. Students select countries and, inquire re: resources use, conservation, replacement programs. Guest speakers discuss alternative/ synthetic energy sources. Guest speakers discuss conservation/ management programs such as reforestation. Field trip(s) to observe renewable energy resources/use.	ENERGY AND HUMAN WELFARE MacMillan 1975 NATIONAL GEOGRAPHIC February 1981 "Energy" TO CHOOSE A FUTURE Resources for the Future 1980 ENERGY CONSERVATION AND PUBLIC POLICY Prentice-Hall 1979	Energy: Crisis and Resolution United Learning Several television specials on the topic.	Reports re: types/ use/management of renewable resources. Science Fair projects re: energy sources/ use/conservation. A graphic survey of renewable resources in the local community. How are they used? Managed? How are renewable energy resources used in the home? In industry?	Reports Discussions Independent activities/ study Writing quality; self expression Art work; self expression Quizzes/Tests Group activities Projects

S T A T E M E N T

As a student progresses through the several grades, there is a need for him/her to develop basic skills which will enable that person to mentally develop spatial relationships between diverse global environments and/or culture groups . Geographic education is the means by which goal achievement can occur .

As a student progresses through the several grades, there is a need for him/her to develop a basic understanding of the relationships between humans and their natural/social lifespaces as well as between culture groups ... in the economic, political, and social arenas of day-to-day co-existence on OUR COMMON HOME: EARTH . Sociology blended with ecological studies is the means by which goal achievement can occur .

Blended together, geographic education, ecological studies, and a sociological perspective can enhance student awareness of/ exposure to/ direct or vicarious interaction with natural and social lifespace phenomena on a global scale . Students perceive the differences and similarities of natural environments and cultures, worldwide . They come to understand the characteristics of diverse settings and learn to appreciate the uniqueness of diverse culture traits .

Why do Hindus believe in reincarnation ? Why do some societies practice polygamy ? Why are women considered to be inferior to men ... in some societies ? Why, in some societies, are individuals considered guilty until proven innocent ? Why are some people nomadic ?

There are endless hundreds of questions to be posed by students as they study the nature and character of diverse global natural/social environments .

END - NOTES

1

Commission on International Education. What We Don't Know Can Hurt Us (Washington, DC: American Council on Education, 1984)

2

Peters, Richard O. The Global Energy Crisis: Today and Tomorrow (Washington, DC: ERIC, 1982) ED 213 597

3

Caldwell, Lynton K. Population and Environment: Inseparable Policy Issues (Washington, DC: The Environmental Fund, 1983)